EXPERIMENT NO. 1

TITLE: Measurement of voltage, current and power

AIM: To measure voltage, current and power in a circuit using Multisim simulation tool.

APPARATUS: Multisim software, resistors, power supply, connecting wires

THEORY:

Voltage: it is the difference in the electric potential between two points. It is the work done in moving a charge from one pole to another through a wire. To determine the voltage between any two points, both a static electric field and a dynamic electromagnetic field is considered.

The mathematical representation of voltage is as follows:

- V = IR
- V = Voltage in volts
- I = Current in amperes
- R = Resistance in ohms

Electric Current: It is the rate of flow of electrons in a conductor. The SI Unit of electric current is the Ampere.

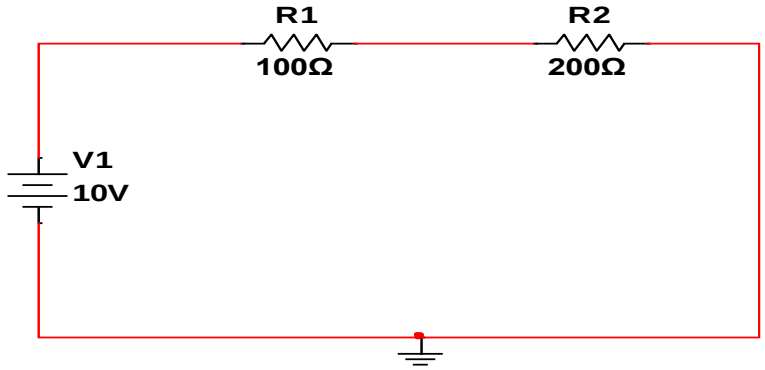
$I = Q/t$

Power: the rate of doing work, it is the work done in unit time. The SI unit of power is Watt (W).

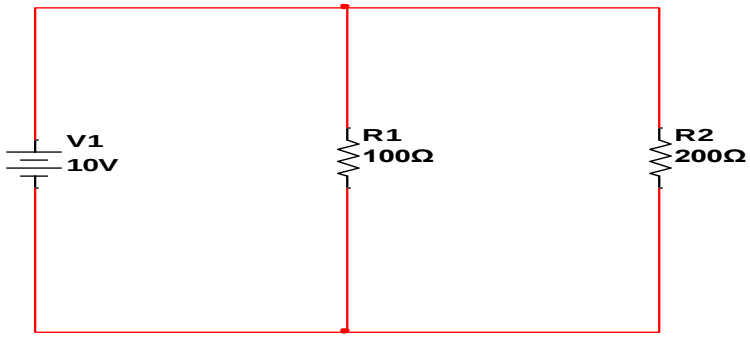
$P = VI = I^2R = V^2/R$

CIRCUIT DIAGRAM:

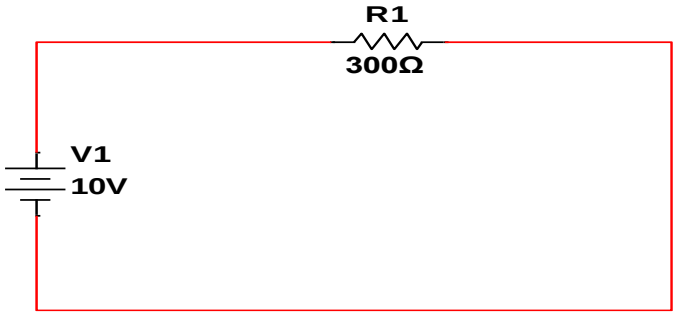
For Voltage Measurement



For Current Measurement



For Power Measurement:



OBSERVATION TABLE:

For Voltage Measurement

S.No.	Supply Voltage	Voltage V1 Theoretical	Voltage V2 Theoretical	Voltage V1 Practical	Voltage V2 Practical

For Current Measurement

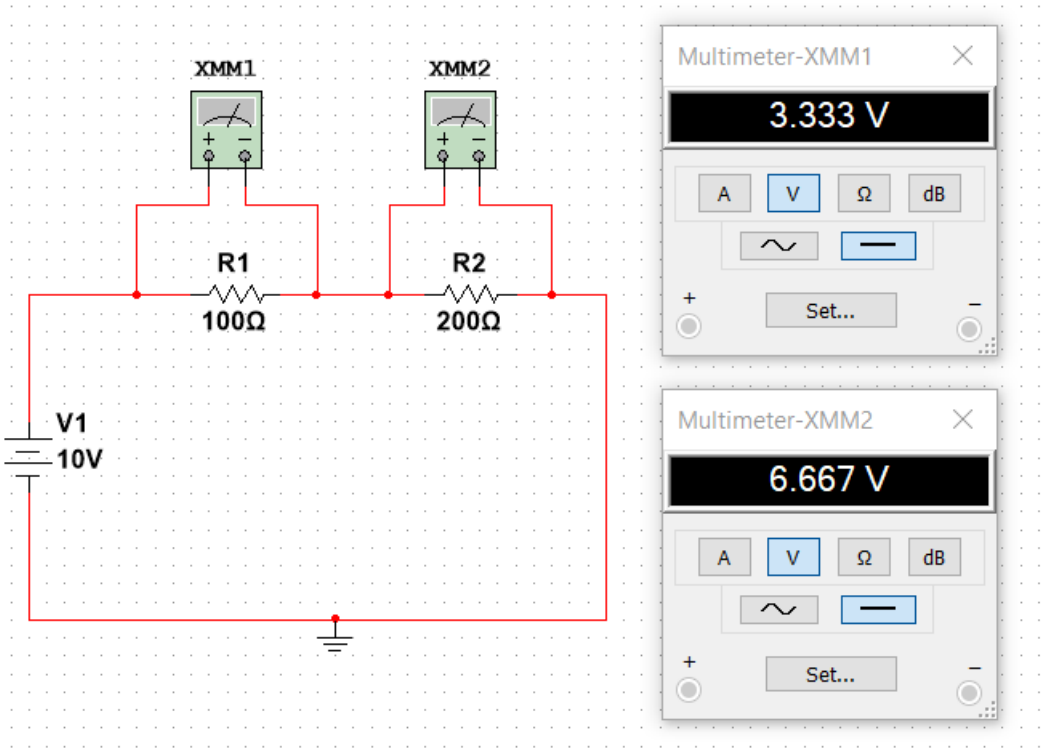
S.No.	Supply Voltage	Current I1 Theoretical	Current I2 Theoretical	Current I1 Practical	Current I2 Practical

For Power Measurement

S.No.	Supply Voltage	Power W Theoretical	Power W Practical

SIMULATION RESULTS:

For Voltage Measurement:



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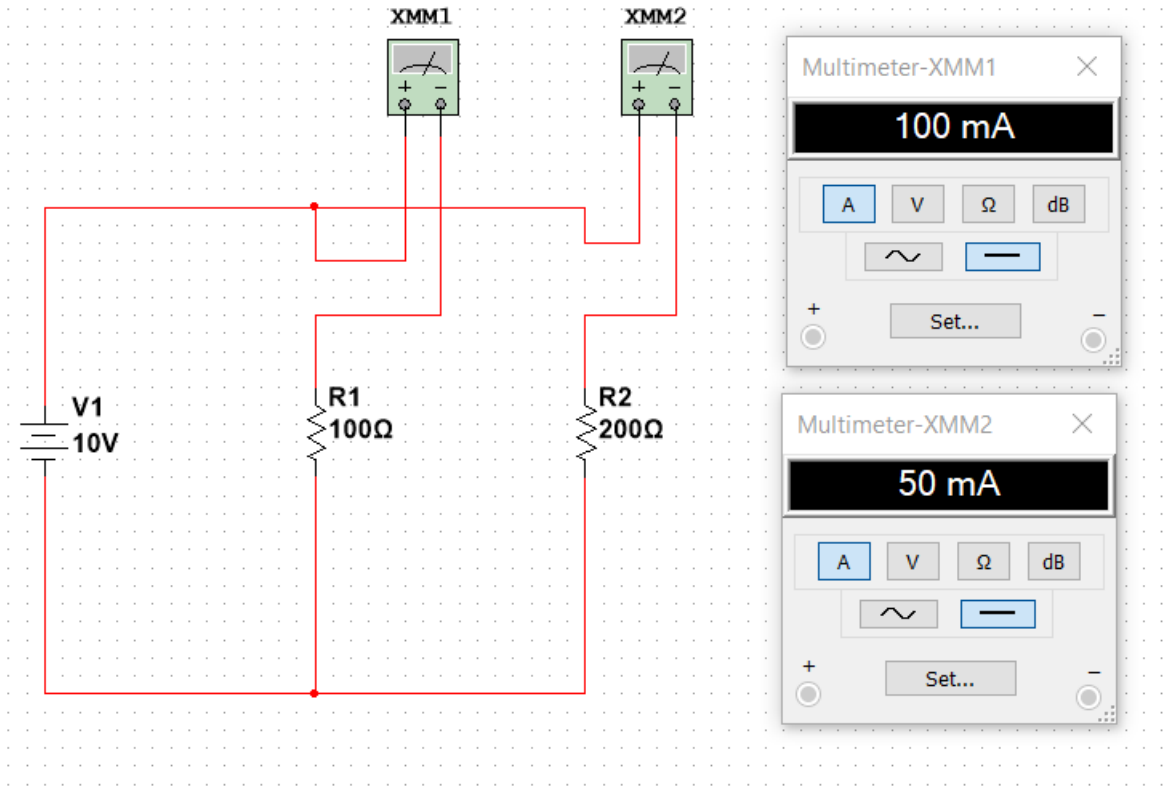
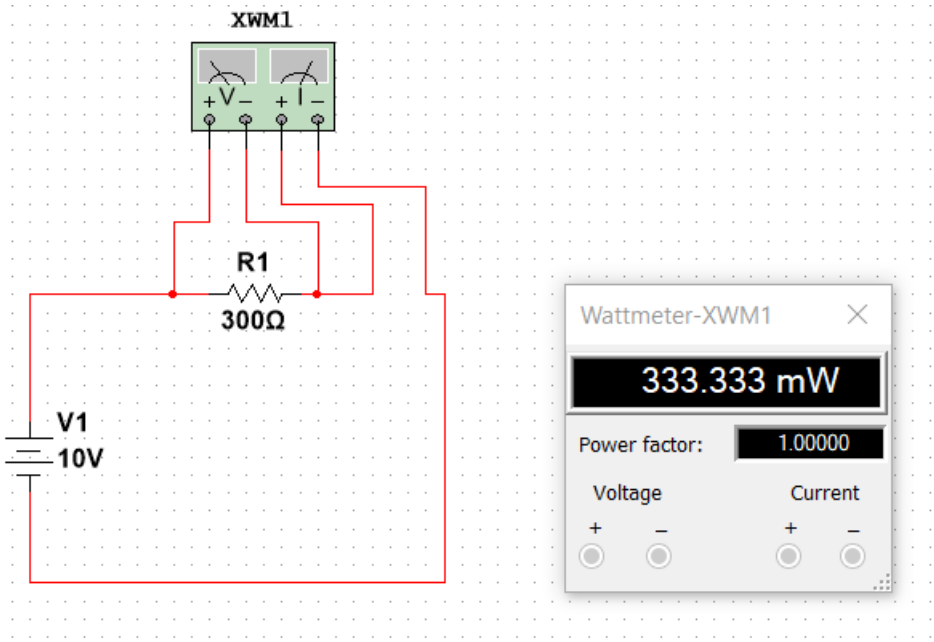


For Power Measurement:



THEORY CALCULATIONS: For voltage, current and power theoretical readings.

ASSIGNMENT QUESTIONS:

Q1.Draw and explain the block diagram of digital multimeter.

Q2.Differentiate between analog and digital multimeter.